

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/059510 A3

(51) International Patent Classification⁷: **A61B 6/00**

N. [US/US]; 975 Sunnyhills Road, Oakland, CA 94610 (US).

(21) International Application Number:
PCT/US2004/041428

(74) Agents: **CHEW, Michelle, S. et al.**; Lawrence Berkeley National Laboratory, Ofc. of the Laboratory Counsel - Patent Dpt., One Cyclotron Road, MS 90B0104, Berkely, CA 94720-8127 (US).

(22) International Filing Date:
10 December 2004 (10.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/529,073 11 December 2003 (11.12.2003) US

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*): **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 12th Floor, Oakland, CA 94607-5200 (US).

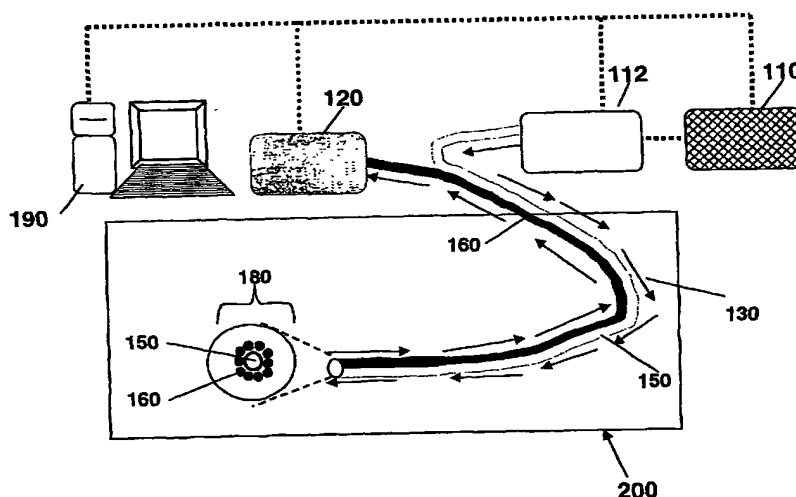
(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **HOLMAN, Hoi-Ying,**

[Continued on next page]

(54) Title: CATHETER-BASED MID-INFRARED REFLECTANCE AND REFLECTANCE GENERATED ABSORPTION SPECTROSCOPY



(57) Abstract: A catheter based method and apparatus for reflectance generated absorption spectral analysis of chronic inflammatory vascular conditions such as seen with atherosclerotic plaque within a blood vessel or other body cavity or compartment. The use of a bright mid range infrared light (mid-IR) source yields detectable reflected optical signals that may be sampled from an area smaller or larger than the typical diameter of a mammalian cell. The mid-IR light is delivered at selected mid-infrared wavenumbers. Using the apparatus and methods, the reflectance spectra and reflectance generated absorption spectra of a target tissue can be compared to reference spectra to identify and distinguish normal epithelium from tissue containing physiological markers indicative of vascular disease or other inflammatory conditions.

WO 2005/059510 A3



FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:

18 August 2005

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.